Title: Pick A Polygon

Link to Outcomes:

- **Problem Solving** Students will formulate problems from everyday and mathematical situations.
- **Communication** Students will relate physical materials, pictures, and diagrams to mathematical ideas. Students will reflect on and clarify their thinking about mathematical ideas and situations.
- **Reasoning** Students will use models, known facts, properties, and relationships to explain their thinking.
- **Connections** Students will use mathematics in their daily lives.
- **Geometry And Spatial Sense** Students will describe, model, draw, and classify shapes.

Brief Overview:

The teacher will read the book The Greedy Triangle by Marilyn Burns. The students will select a polygon and construct a picture. Using mathematical vocabulary the students will describe their pictures.

Grade/Level:

Grade 3

Duration/Length:

Two class sessions should be allocated for this lesson.

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Names of the shapes: circle, rectangle, square, and triangle
- Line segment
- Vertex of an angle

Objectives:

- Students will identify the characteristics of polygons.
- Students will identify the polygons: pentagon, hexagon, heptagon, octagon, nonagon, and decagon.
- Students will identify a line segment.
- Students will identify a vertex of an angle.

Materials/Resources/Printed Materials:

- The Greedy Triangle by Marilyn Burns
- Thirty precut polygons
- Thirty pieces of white 8" x 12" construction paper
- Teacher made precut regular polygons: rectangle, square, triangle, pentagon, hexagon, heptagon, octagon, nonagon, and decagon (Teacher Resources #2 - #9)

Development/Procedures:

- The teacher will introduce regular polygons by eliciting from the students the characteristics of each shape emphasizing line segments, vertices, and angles. Use the precut polygons while discussing each shape.

- The teacher will read the book The Greedy Triangle. After reading the book have the students identify where shapes are found in real life. Record this information on chart paper. Encourage students to use the names of the polygons.

- Develop a rubric with the students for evaluating their picture. See Teacher Resource #1 for an example of a rubric.

- Ask the students to choose one of the shapes to create a picture. For example, a student may choose a pentagon to represent one section of a soccer ball making the same shape or other shapes to finish the picture. The students may want to use pattern blocks to trace some shapes they would want to make.

- Ask the students to describe the shapes they used in their pictures by writing a paragraph about their pictures. Encourage the students to use the names of the shapes, identify line segments, and vertices of angles.

- Ask the students to share their pictures and read their responses.

Evaluation:

The teacher will read the students' responses describing their pictures. Based on the rubric, the teacher will grade accordingly.

Extension/Follow Up:

Use the software program *MicroWorlds Project Builder* to recreate their polygon picture.

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* Adapted from *Math and Literature K-3,* Marilyn Burns

RUBRICS

Questions to Ask Yourself While Scoring a Response:

- Does the student describe the shapes in the design?
- Does the student describe the line segments in the design?
- Does the student describe the vertices of an angle?
- Does the student use mathematical terms when describing his picture?

Scoring Rubric:

High Response:

A student would have a creative response which would include the description of the shapes, the explanation of line segments, vertices, and the use of mathematical terms representing his work.

Medium Response:

A student would have a minimum amount of information in his response. This may have some of the required elements of shapes but not all of them. For example, the student might describe the shapes but not use the correct mathematical term "polygon." He must have at least two out of the four requirements in his final work.

Low Response:

A student would have one of the four requirements in his response. He may have a beautiful picture but did not meet the expectations of the created rubric.

An example for the students to use to check their work.

My Polygon:

- ☐ I have described the shapes of my picture in my writing.
- ☐ I have described the number of line segments in my writing.
- ☐ I have explained the vertices of an angle.
- ☐ I have used mathematical terms to describe my work.

Teacher Resource #2